SEQUENCE LISTING

```
<110> Jackson, David C
            Ghosh, Souravi
 5
            Walker, John
      <120> T Helper Cell Epitopes
      <130> 501902/MRO
10
      <150> US 09/890650
      <151> 2002-03-22
      <150> PCT/AU00/00070
      <151> 2000-02-07
      <150> AU PP8533
      <151> 1999-02-05
20
      <150> AU PQ2013
      <151> 1999-08-04
      <160> 30
25
     <170> PatentIn version 3.1
      <210> 1
     <211> 17
<212> PRT
30
     <213> CDV peptide P2
      <400> 1
      Ser Ser Lys Thr Gln Thr His Thr Gln Gln Asp Arg Pro Pro Gln Pro
35
                      5
                                          10
     Ser
40
     <210> 2
     <211> 17
     <212> PRT
<213> CDV peptide P4
45
     <400> 2
     Gln Pro Ser Thr Glu Leu Glu Glu Thr Arg Thr Ser Arg Ala Arg His
50
                      5
                                          10
     Ser
55
     <210> 3
<211> 17
<212> PRT
60
     <213> CDV peptide P6
     <400> 3
     Arg His Ser Thr Thr Ser Ala Gln Arg Ser Thr His Tyr Asp Pro Arg
```

```
10
                                                              15
      Thr
 5
      <210> 4
<211> 17
<212> PRT
<213> CDV peptide P8
10
      <400> 4
      Pro Arg Thr Ser Asp Arg Pro Val Ser Tyr Thr Met Asn Arg Thr Arg
      Ser
20
     <210> 5
<211> 17
<212> PRT
<213> CDV peptide Pl0
25
      <400> 5
30
      Thr Arg Ser Arg Lys Gln Thr Ser His Arg Leu Lys Asn Ile Pro Val
      His
35
     <210> 6
<211> 17
<212> PRT
40
      <213> CDV peptide P24
     <400> 6
45
     Ser His Gln Tyr Leu Val Ile Lys Leu Ile Pro Asn Ala Ser Leu Ile
                                       10
     Glu
50
     <210> 7
     55
     <400> 7
60
     Ile Gly Thr Asp Asn Val His Tyr Lys Ile Met Thr Arg Pro Ser His
                    5
                          . 10
```

Gln

```
<210> 8
  5
       <211> 17
<212> PRT
       <213> CDV peptide P23
       <400> 8
 10
       Tyr Lys Ile Met Thr Arg Pro Ser His Gln Tyr Leu Val Ile Lys Leu
                                               10
 15
       Ile
       <210> 9
<211> 17
<212> PRT
 20
       <213> CDV peptide P25
       <400> 9
 25
       Lys Leu Ile Pro Asn Ala Ser Leu Ile Glu Asn Cys Thr Lys Ala Glu
                         5
                                               10
 30
       Leu
      <210> 10
<211> 17
<212> PRT
<213> CDV peptide P27
 35
      <400> 10
40
      Ala Glu Leu Gly Glu Tyr Glu Lys Leu Leu Asn Ser Val Leu Glu Pro
45
      Ile
      <210> 11
<211> 17
<212> PRT
<213> CDV peptide P28
50
      <400> 11
55
      Lys Leu Leu Asn Ser Val Leu Glu Pro Ile Asn Gln Ala Leu Thr Leu
                       5
                                  10
60
     Met
```

<210> 12

```
<211> 17
<212> PRT
<213> CDV peptide P29
     <400> 12
       Glu Pro Ile Asn Gln Ala Leu Thr Leu Met Thr Lys Asn Val Lys Pro
                                             10
 10
      Leu
      <210> 13
<211> 17
<212> PRT
       <213> CDV peptide P33
 20
     <400> 13
      Phe Ala Gly Val Val Leu Ala Gly Val Ala Leu Gly Val Ala Thr Ala
                              10
 25
      Ala
 30
     <210> 14
      <211> 17
<212> PRT
<213> CDV peptide P34
35
      <400> 14
      Gly Val Ala Leu Gly Val Ala Thr Ala Ala Gln Ile Thr Ala Gly Ile
                      5
40
      Ala
      <210> 15
<211> 17
<212> PRT
45
      <213> COV peptide P35
50
     <400> 15
      Thr Ala Ala Gln Ile Thr Ala Gly Ile Ala Leu His Gln Ser Asn Leu
                                            10
55
      Asn
60
     <210> 16
<211> 17
      <212> PRT
     <213> CDV peptide P36
```

```
<400> 16
       Gly Ile Ala Leu His Gln Ser Asn Leu Asn Ala Gln Ala Ile Gln Ser
                                            10
  5
      Leu
 10
      <210> 17
<211> 17
      <212> PRT
      <213> CDV peptide P37
 15
      <400> 17
      Asn Leu Asn Ala Gln Ala Ile Gln Ser Leu Arg Thr Ser Leu Glu Gln
                                           10
20
      Ser
25
      <210> 18
      <211> 17
<211> 17
<212> PRT
<213> CDV peptide P38
30
      <400> 18
      Gln Ser Leu Arg Thr Ser Leu Glu Gln Ser Asn Lys Ala Ile Glu Glu
                      5
                                10
35
      Ile
40
     <210> 19
<211> 17
<212> PRT
      <213> CDV peptide P39
45
      <400> 19
     Glu Gln Ser Asn Lys Ala Ile Glu Glu Ile Arg Glu Ala Thr Gln Glu
50
     Thr
55
     <210> 20
     <211> 17
     <212> PRT
     <213> CDV peptide P47
60
     <400> 20
     Thr Glu Leu Leu Ser Ile Phe Gly Pro Ser Leu Arg Asp Pro Ile Ser
```

```
Ala
  5
       <210> 21
<211> 17
       <212> PRT
 10
       <213> CDV peptide P62
       <400> 21
       Pro Arg Tyr Ile Ala Thr Asn Gly Tyr Leu Ile Ser Asn Phe Asp Glu
l 5 10 15
 15
       Ser
 20
       <210> 22
       <210     22
<211>     17
<212>     PRT
<213>     CDV peptide P68
 25
       <400> 22
       Cys Ile Arg Gly Asp Thr Ser Ser Cys Ala Arg Thr Leu Val Ser Gly
 30
                                                10
       Thr
 35
      <210> 23
<211> 17
<212> PRT
40
      <213> CDV peptide P64
       <400> 23
      Asp Glu Ser Ser Cys Val Phe Val Ser Glu Ser Ala Ile Cys Ser Gln 1 5 15
45
      Asn
50
      <210> 24
      <211> 17
<212> PRT
<213> CDV peptide P74
55
      <400> 24
      Thr Ser Thr Ile Ile Asn Gln Ser Pro Asp Lys Leu Leu Thr Phe Ile
60
                                            10
```

Ala

```
<210> 25
      <211> 17
      <212> PRT
      <213> CDV peptide P75
      <400> 25
10
      Ser Pro Asp Lys Leu Leu Thr Phe Ile Ala Ser Asp Thr Cys Pro Leu
                                            10
      Val
15
      <210> 26
      <211> 17
<212> PRT
<213> CDV peptide P32
20
      <400> 26
      Ser Gly Arg Arg Gln Arg Arg Phe Ala Gly Val Val Leu Ala Gly Val
                                           10
      Ala
30
     <210> 27
<211> 662
<212> PRT
35
      <213> CDV fusion protein
      <400> 27
40
     Met His Arg Gly Ile Pro Lys Ser Ser Lys Thr Gln Thr His Thr Gln
     Gln Asp Arg Pro Pro Gln Pro Ser Thr Glu Leu Glu Glu Thr Arg Thr
45
                                       25
     Ser Arg Ala Arg His Ser Thr Thr Ser Ala Gln Arg Ser Thr His Tyr
                                  40
50
     Asp Pro Arg Thr Ser Asp Arg Pro Val Ser Tyr Thr Met Asn Arg Thr
55
     Arg Ser Arg Lys Gln Thr Ser His Arg Leu Lys Asn Ile Pro Val His
     Gly Asn His Glu Ala Thr Ile Gln His Ile Pro Glu Ser Val Ser Lys
                      85
                                           90
```

Gly Ala Arg Ser Gln Ile Glu Arg Arg Gln Pro Asn Ala Ile Asn Ser

100	105	110

5	Gly	y Se	r Hi:	s Cys	Thi	r Trg) Leu	1 Val		u Trj	P Cyt	E Lei	1 Gl		t Al	a Ser
10	Le	2 Pho 13	e Let 0	ı Cys	Se 1	c Lys	3 Ala 135	Glr	n Ile	e His	s Trp	2 Asp 140		ı Let	ı Se:	r Thr
15	Ile 145	Gl;	y Ile	lle	Gly	7 Thr 150	c Asp	Asr	n Val	l His	155		: Ile	e Met	: Thi	Arg 160
13	Pro	Se	r His	Gln	Tyr 165	Leu	Val	Ile	Lys	170		Pro	Asr	Ala	Se:	: Leu
20	Ile	Gli	neA L	Cys 180	Thr	: Lys	Ala	Glu	105	Gly	Gl u	Tyr	Glu	Lys 190		ı Leu
25·	Asn	Sei	r Val 195	Leu	Glu	Pro	Ile	Asn 200	Gln	Ala	Leu	Thr	Leu 205		Thr	Lys
30	Asn	Val 210	L Lys	Pro	Leu	Gln	Ser 215	Leu	Gly	Ser	Gly	Arg 220		Gln	Arg	Arg
	Phe 225	Ala	Gly	Val	Val	Leu 230	Ala	Gly	Val	Ala	Leu 235		Val	Ala	Thr	Ala 240
35	Ala	Gln	Ile	Thr	Ala 245	Gly	.Ile	Ala	Leu	H1s 250	Gln	Ser	Asn	Leu	Asn 255	Ala
40	Gln	Ala	Ile	Gln 260	Ser	Leu	Arg	Thr	Ser 265	Leu	Glu	Gln	Ser	Asn 270	Lys	Ala
45	Ile	Glu	Glu 275	Ile	Arg	Glu	Ala	Thr 280	Gln	Glu	Thr	Val	Ile 285	Ala	Val	Gln
50	Gly	Val 290	Gln	Asp	Tyr	Val	Asn 295	Asn	Glu	Leu	Val	Pro 300	Ala	Met	Gln	His
	Met 305	Ser	Cys	Glu	Leu	Val 310	Gly	Gln	Arg	Leu	Gly 315	Leu	Arg	Leu	Leu	Arg 320
55	Tyr	Tyr	Thr	Glu	Leu 325	Leu	Ser	Ile	Phe	Gly 330	Pro	Ser	Leu	Arg	Asp 335	Pro
60	Ile	Ser	Ala	Glu 340	Ile	Ser	Ile	Gln	Ala 345	Leu	Ile	Tyr	Ala	Leu 350	Gly	Gly
	Glu	Ile	His	Lys	Ile	Leu	Glu	Lys	Leu	Gly	Tyr	Ser	Gly	Ser	Asp	Met .

355	360	365

5	110	e Al. 37	a 11	e Lei	ı Glu	ı Sei	7 Arg	g Gly	y Ile	e Ly:	s Thi	380		e Thi	r Hi	s Val
10	As;	p Le	u Pr	o Gly	y Lys	390	e Ile	e Ile	e Lei	Sea	7 Ile 395		г Ту:	r Pro	o Thi	100
15	Se	Gl:	u Va	l Lys	9 Gly 405	Val	l Ile	e Val	l His	410		Glu	Ala	a Val	1 Ser 415	
75) te	ı Ile	e Gl	y Ser 420	Gln	Glu	Trp	Туг	Thr 425		: Val	Pro	Arq	7 Ty:		e Ala
20	Thi	Ası	435	y Tyr	Leu	Ile	: Ser	440		: Asp	Glu	Ser	Ser 445		val	Phe
25	Val	. Se 1 450	Gli	ser	Ala	Ile	Cys 455	Ser	Gln	ne <i>k</i> ı	Ser	Leu 460		Pro	Met	Ser
30	Pro 465	Lev	Leu	Gln	Gln	Cys 470	Ile	Arg	Gly	' Asp	Thr 475	Ser	Ser	: Cys	. Ala	Arg 480
a.c	Thr	Leu	ı Val	. Ser	Gly 485	Thr	Met	Gly	Asn	Lys 490		Ile	Leu	Ser	Lys 195	
35	Asn	Ile	val	Ala 500	neA	Суз	Ala	Ser	11e 505	Leu	Суз	Lys	СЛа	Tyr 510		Thr
40	Ser	Thr	Ile 515	Ile	Asn	Gln	Ser	Pro 520	Asp	Lys	Leu	Leu	Thr 525	Phe	Ile	Ala
45	Ser	Asp 530	Thr	Cys	Pro	Leu	Val 535	Glu	Ile	Asp	Gly	Ala 540	Thr	Ile	Gln	Val
50	Gly 545	Gly	Arg	Gln	Tyr	Pro 550	Asp	Met	Val	Tyr	Glu 555	Gly	Lys	Val	Ala	Leu 560
	Gly	Pro	Ala	Ile	Ser 565	Leu	Asp	Arg	Leu	Asp 570	Val	Gly	Thr	neA	Leu 575	Gly
55	Asn	Ala	Leu	Lys 500	Lys	Leu	Asp	qeA	Ala 585	Lys	Val	Leu	Ile	Asp 590	Ser	Ser
60	neA	Gln	Ile 595	Leu	Glu	Thr	Val	Arg 600	Arg	Ser	Ser	Phe	Asn 605	Phe	Gly	Ser
	Leu	Leu	Ser	Val	Pro	Ile	Leu	Ser	Cys	Thr	Ala	Leu	Ala	Leu	Leu	Leu

615 620 610 Leu Ile Tyr Cys Cys Lys Arg Arg Tyr Gln Gln Thr Leu Lys Gln His 630 5 635 Thr Lys Val Asp Pro Ala Phe Lys Pro Asp Leu Thr Gly Thr Ser Lys 10 Ser Tyr Val Arg Ser Leu 660 . 15 <210> 28 <211> 10 <212> PRT <213> LHRH 1-10 20 <220> <221> MOD RES <222> (1)..(1) <223> PYRROLIDONE CARBOXYLIC ACID 25 <400> 28 Glu His Trp Ser Tyr Gly Leu Arg Pro Gly 30 1 5 <210> 29 <211> 9 <212> PRT <213> LHRH 2-10 35 <400> 29 40 His Trp Ser Tyr Gly Leu Arg Pro Gly <210> 30 <211> 27 45 <212> PRT <213> Artificial control peptide <400> 30 50 Ala Leu Asn Asn Arg Phe Gln Ile Lys Gly Val Glu Leu Lys Ser Asn

Ala Asn Pro Asn Ala Asn Pro Asn Ala Asn Pro

20

55